OIPE
MAR 14 2005
PATENT & TRADEMARK OFFICE

FIG. 1

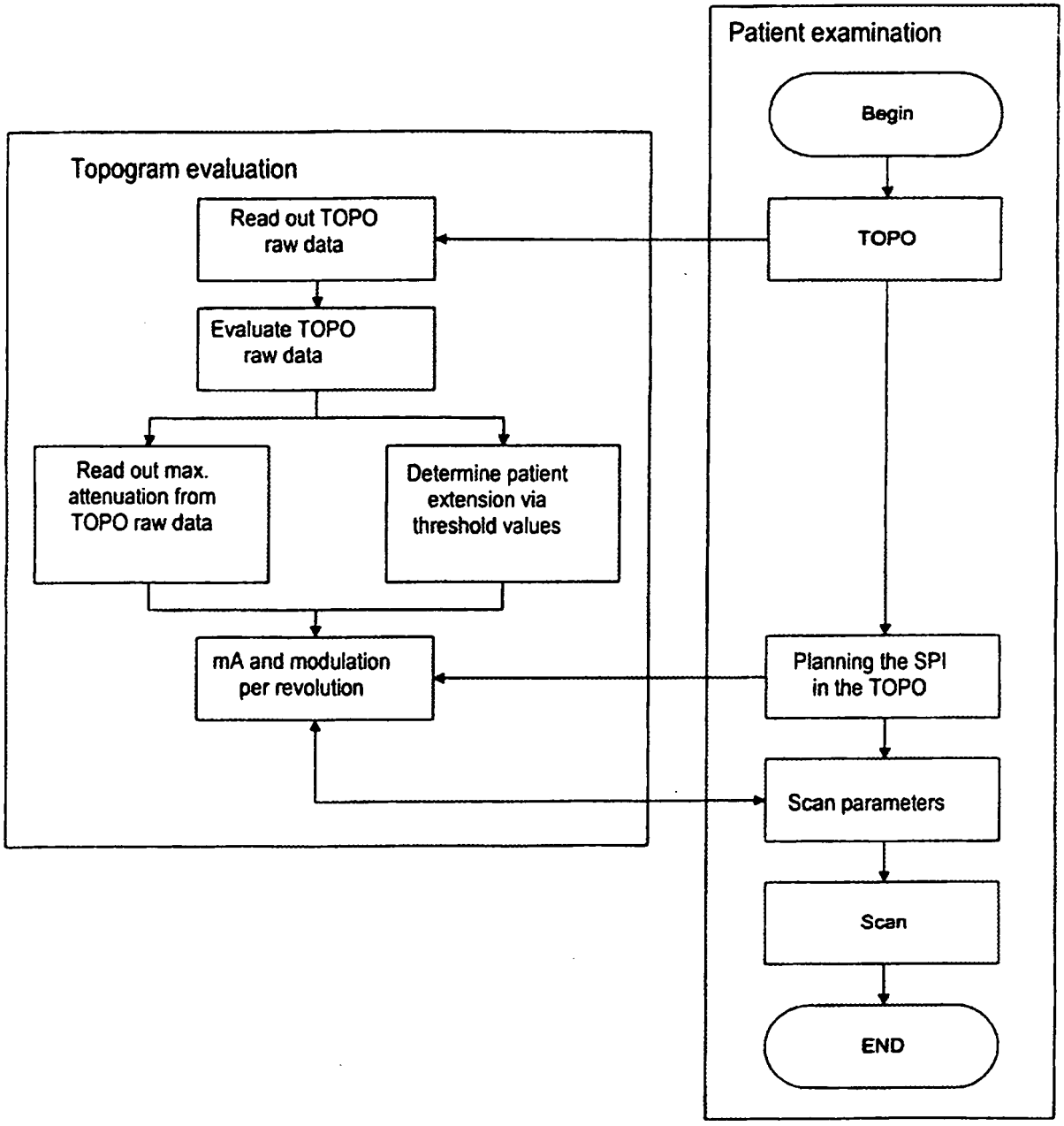


FIG. 2

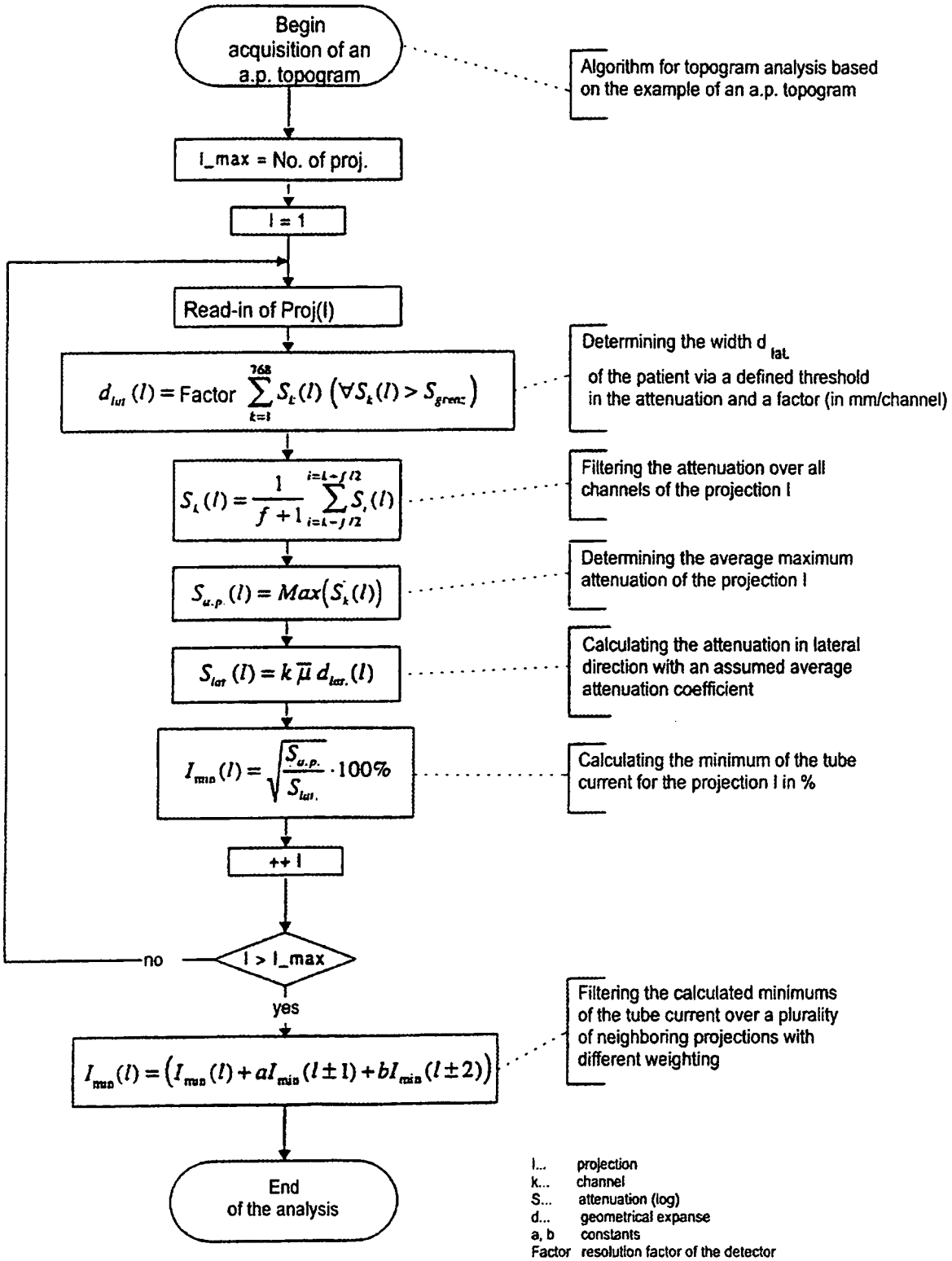

Begin acquisition of an a.p. topogram
Algorithm for topogram analysis based on the example of an a.p. topogram
l_max = No. of proj.
l = 1
Read-in of Proj(l)
$d_{lat}(l) = \text{Factor} \sum_{k=1}^{768} S_k(l) \left(\forall S_k(l) > S_{grenz}\right)$
Determining the width $d_{lat.}$ of the patient via a defined threshold in the attenuation and a factor (in mm/channel)
$S_k(l) = \frac{1}{f+1} \sum_{i=k-f/2}^{i=k-f/2} S_i(l)$
Filtering the attenuation over all channels of the projection l
$S_{a.p.}(l) = Max\left(S_k(l)\right)$
Determining the average maximum attenuation of the projection l
$S_{lat}(l) = k\,\bar{\mu}\,d_{lat.}(l)$
Calculating the attenuation in lateral direction with an assumed average attenuation coefficient
$I_{min}(l) = \sqrt{\frac{S_{a.p.}}{S_{lat.}}} \cdot 100\%$
Calculating the minimum of the tube current for the projection l in %
++ l
no
l > l_max
yes
$I_{min}(l) = \left(I_{min}(l) + aI_{min}(l \pm 1) + bI_{min}(l \pm 2)\right)$
Filtering the calculated minimums of the tube current over a plurality of neighboring projections with different weighting
End of the analysis
l... projection
k... channel
S... attenuation (log)
d... geometrical expanse
a, b constants
Factor resolution factor of the detector

FIG. 3

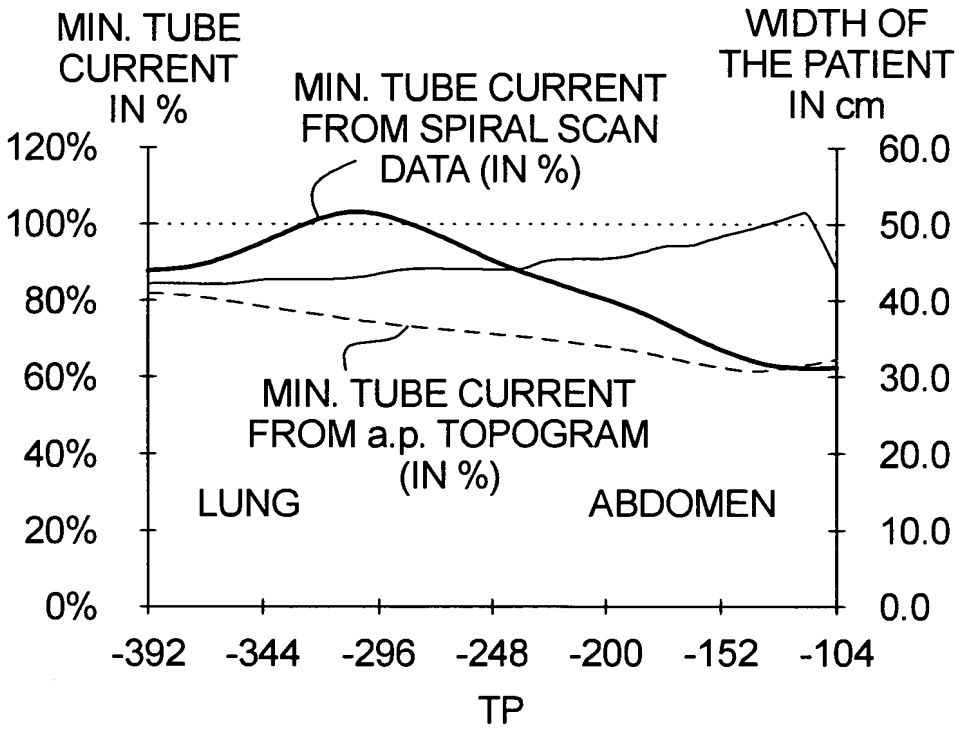
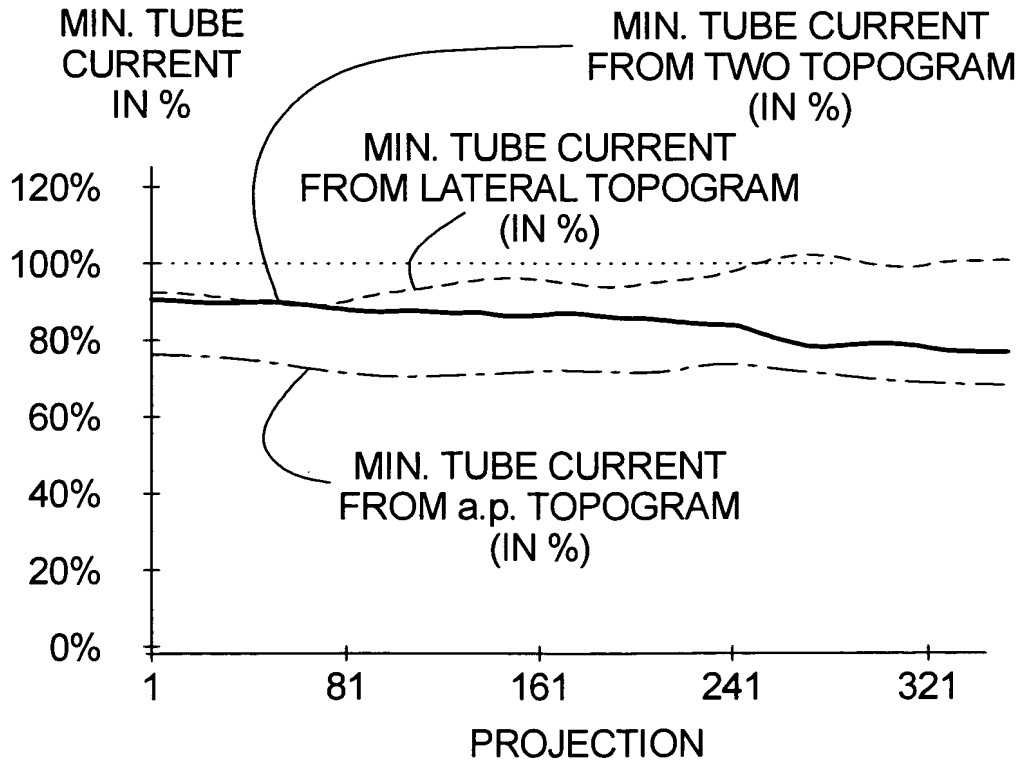

MIN. TUBE CURRENT IN %
WIDTH OF THE PATIENT IN cm
MIN. TUBE CURRENT FROM SPIRAL SCAN DATA (IN %)
120%
100%
80%
60%
40%
20%
0%
60.0
50.0
40.0
30.0
20.0
10.0
0.0
MIN. TUBE CURRENT FROM a.p. TOPOGRAM (IN %)
LUNG
ABDOMEN
-392
-344
-296
-248
-200
-152
-104
TP

FIG. 4


MIN. TUBE CURRENT IN %
MIN. TUBE CURRENT FROM TWO TOPOGRAM (IN %)
MIN. TUBE CURRENT FROM LATERAL TOPOGRAM (IN %)
120%
100%
80%
60%
40%
20%
0%
MIN. TUBE CURRENT FROM a.p. TOPOGRAM (IN %)
1
81
161
241
321
PROJECTION

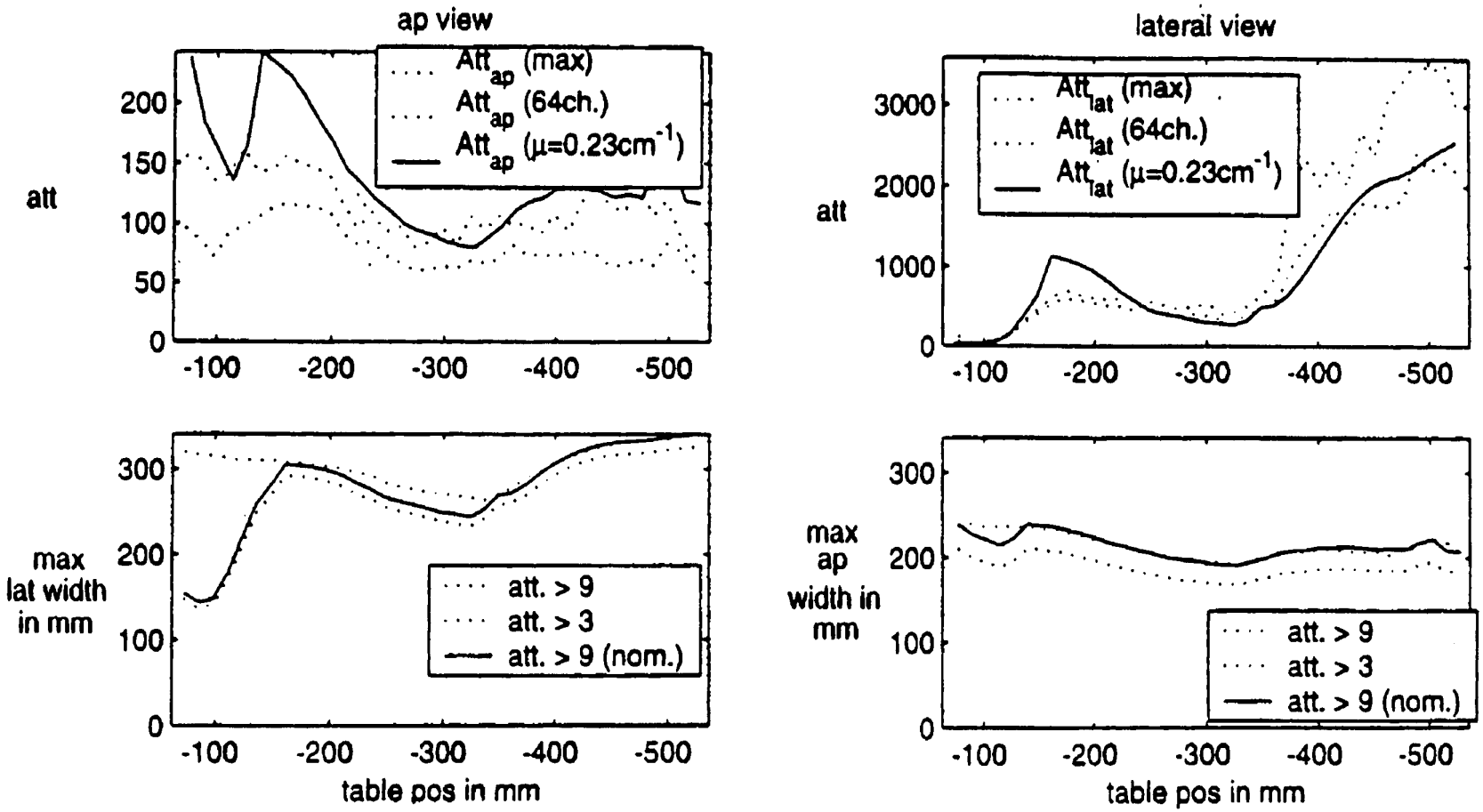

ap view
lateral view
att
Att_ap (max)
Att_ap (64ch.)
Att_ap (μ=0.23cm^-1)
Att_lat (max)
Att_lat (64ch.)
Att_lat (μ=0.23cm^-1)
200
150
100
50
0
3000
2000
1000
-100
-200
-300
-400
-500
max lat width in mm
max ap width in mm
300
att. > 9
att. > 3
att. > 9 (nom.)
table pos in mm

FIG. 5